Operating Manual

Version 1.3.2

Thread cutting device

M5 - M12 / B16

Part no. 3352042

1 Table of contents

1.1 Intended use 3
1.2 Safety instructions 3
1.3 Scope of delivery 3
1.4 Technical specification 4
1.5 Structure 4
1.6 Assembly 4
1.7 Operation 5
1.8 Insert tap 5
1.9 Torque adjustment 6
1.10 Maintenance and servicing 7
1.11 Change information operating manual 7

Preface

Dear customer,

Thank you very much for purchasing a product made by OPTIMUM.

OPTIMUM metal working machines offer a maximum of quality, technically optimum solutions and convince by an outstanding price performance ratio. Continuous enhancements and product innovations guarantee state-of-the-art products and safety at any time. Before commissioning the machine please thoroughly read these operating instructions and get familiar with the machine. Please also make sure that all persons operating the machine have read and understood the operating instructions beforehand. Keep these operating instructions in a safe place nearby the machine.

Information

The operating instructions include indications for safety-relevant and proper installation, operation and maintenance of the machine. The continuous observance of all notes included in this manual guarantee the safety of persons and of the machine.

The manual determines the intended use of the machine and includes all necessary information for its economic operation as well as its long service life. In the paragraph "Maintenance" all maintenance works and functional tests are described which the operator must perform in regular intervals. The illustration and information included in the present manual can possibly deviate from the current state of construction of your machine. Being the manufacturer we are continuously seeking for improvements and renewal of the products. Therefore, changes might be performed without prior notice. The illustrations of the machine may be different from the illustrations in these instructions with regard to a few details. However, this does not have any influence on the operability of the machine.
Therefore, no claims may be derived from the indications and descriptions. Changes and errors are reserved!

Your suggestion with regard to these operating instructions are an important contribution to optimising our work which we offer to our customers. For any questions or suggestions for improvement, please do not hesitate to contact our service department.

If you have any further questions after reading these operating instructions and you are not able to solve your problem with a help of these operating instructions, please contact your specialised dealer or directly the company OPTIMUM.

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1.1 Intended use

Usage

The thread cutting device is mainly used for pillar drilling machines and bench drills.
The direction of rotation is changed via the integrated reversing gear by retracting the machine spindle.

Advantages:

- Time saving due to shorter cycle times.
- Handling the machine with care.
- Energy saving due to almost constant power consumption.

The prerequisite for using the thread cutting device is that it is mounted in a driven machine spindle. After insertion into the machine, the retaining bar must be secured against twisting in both directions of rotation. The thread cutting device is equipped with a length compensation in tension and compression direction. This compensates for differences between spindle feed and tap pitch. An overload clutch is integrated into the thread cutting device. The taps are picked up and centred via flexible collets.

The torque generated during the thread cutting process is transmitted via adjustable and floating driving cams.

- The thread cutting device is **not** designed for internal coolant supply.
- The thread cutting device is suitable for cutting right-hand and left-hand threads.

We will not be held liable for any damages resulting from any operation which is not in accordance with the intended use.

1.2 Safety instructions

WARNING!

Before using the thread cutting device, make sure

- **that there is no danger to persons**
- **and no damage to property.**

Avoid any unsafe work methods:

- Make sure that your operation does not create a safety hazard.
- The rules specified in these operating instructions must be observed during assembly, operation, maintenance and repair.
- Do not work on the thread cutting device, if your concentration is reduced, for example, because you are taking medication.
- Observe the accident prevention regulations issued by your Employers Liability Insurance Association or other supervisory authorities applicable to your company.
- Inform the supervisor about all hazards or faults.
- Use the prescribed personnel protective equipment. Wear tight-fitting clothes and a hair net if necessary.
- The instructions of the machine tool manufacturer still apply.

1.3 Scope of delivery

Thread cutting device

Tool:
2 Open-end spanner
1 Support bar
1 Allen key

Two flexible collets

INFORMATION

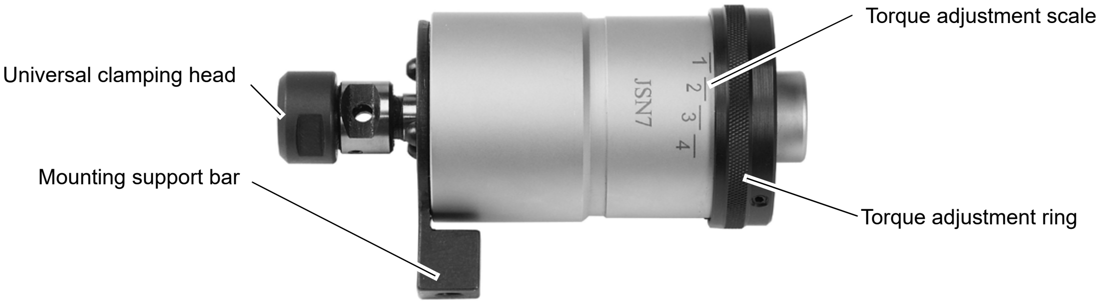
The thread cutting device is delivered without Morse taper shank. A required matching Morse taper shank to the machine tool must be ordered separately.
☞ Technical specification on page 4

1.4 Technical specification

Thread cutting device M5 - M12

Disengagement path	Free wheeling	Length compensation on tension	Max. Speed	Transmission ratio forward and return	Cutting area	Clamping range	Shaft receptacle	Length	Length compensation under pressure
4 mm	1.5 mm	8.5 mm	200 rpm	1 : 1.75	M5 - M12	3.5-10	B16 DIN 238	156 mm	5 mm

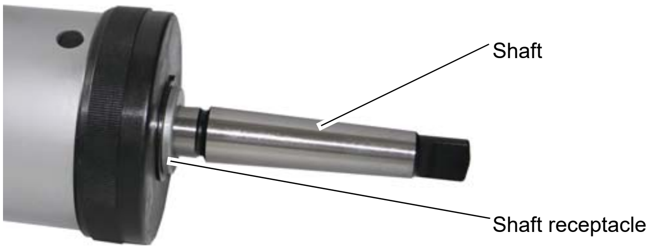
1.5 Structure



Img. 1-1: Structure of the thread cutting device

1.6 Assembly

- ➜ Clean the receptacle on the thread cutting device and on the shank.
- ➜ Insert the shaft into the receptacle.

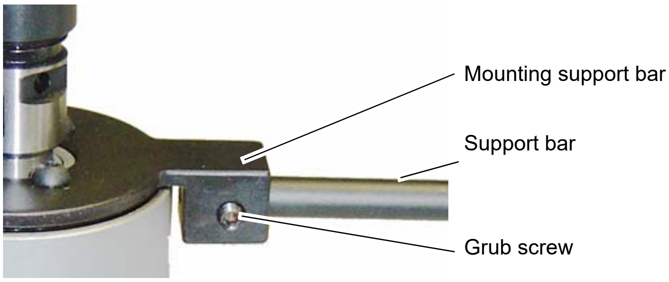


Img. 1-2: Shaft assembly

CAUTION!

The grub screw must be turned completely into the holder of the holding rod.

Align position of countersink with position of grub screw.

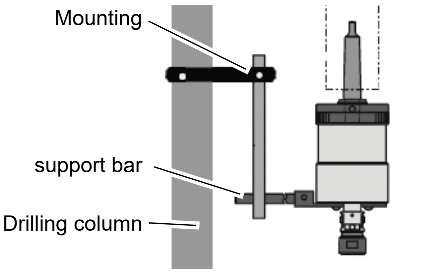


Img. 1-3: Mounting support bar

- ➜ Fix the shaft with a light tap with a plastic hammer.
- ➜ Slide the support bar into the receptacle.
- ➜ Fix the holding rod with the grub screw.

CAUTION!

The machine tool must be secured against restarting when the thread cutting device is mounted. Follow the instructions of the machine tool manufacturer.



Img. 1-4: Securing assembly

➜ Mount the thread cutting device in the receptacle of the machine spindle.

➜ Secure the support bar against twisting in both directions.

➜ Ensure free guidance of the support bar for the entire spindle travel.

1.7 Operation

INFORMATION

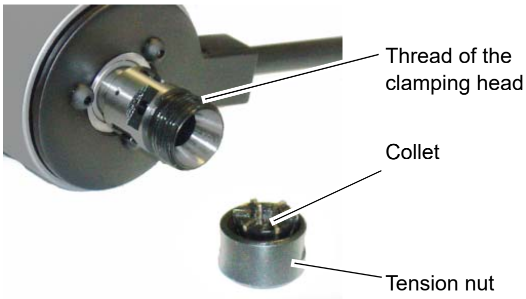
This device is intended for use on drilling machines without a tapping device with automatic reversal of the direction of rotation. The speed of the machine used for thread cutting should therefore be kept as low as possible, but not exceed 200 rpm.

Manual retraction of the drilling sleeve in time to reverse the direction of rotation of the tapping attachment is hardly possible if the speed of the drilling machine is too high. The slipping clutch is active for too long and thus heats up too quickly and too much.

1.8 Insert tap

The tap is clamped by adjustable and floating drive cams. The tap is centred via the collet chuck.

➜ Unscrew the clamping nut from the thread cutting device.



➜ Place the required collet in the clamping nut.

➜ Screw the clamping nut with collet onto the thread of the clamping head

➜ Push the tap into the collet.

➜ Tighten the clamping nut firmly using an open-ended spanner.

Img. 1-5: Tap installation

The integrated overload clutch interrupts the torque transmission between machine spindle and tap during the tapping process if the set torque is exceeded. This protects the tap from damage.

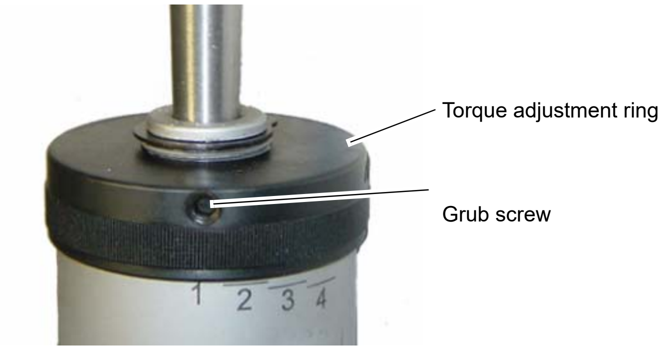
WARNING!

Torque adjustment may only be carried out when the machine is switched off.

The torque setting depends on various factors, e.g. speed, material, lubrication. Therefore, no torque values can be given.

1.9 Torque adjustment

- ➜ Loosen the grub screw in the torque adjustment ring.
- ➜ Set the torque adjustment ring to the lowest torque value (turn clockwise as far as it will go).
- ➜ Make a test thread before you start cutting a larger number of threads.



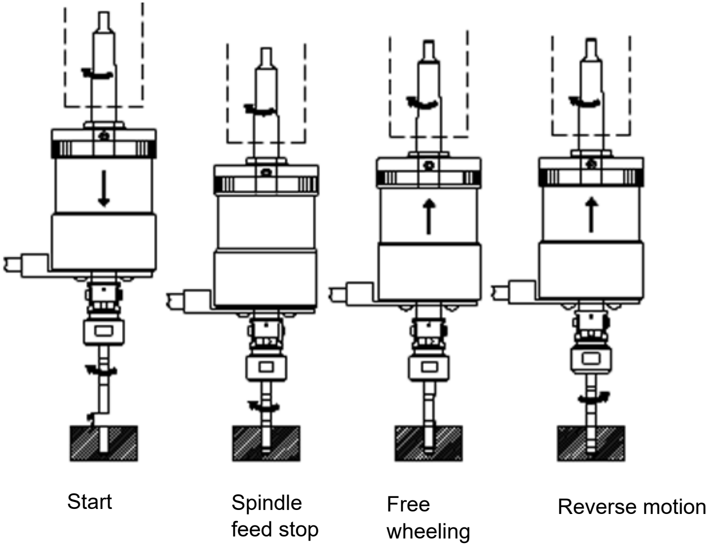
Img. 1-6: Overload clutch

- ➜ If the clutch slips. Increase the torque via the adjusting ring and fix the setting by tightening the grub screw.
- ➜ Cut the thread again.
- ➜ Reduce torque turn clockwise.
- ➜ Increase torque turn counterclockwise.
- ➜ After reaching the thread depth, retract the tool spindle. The spindle of the tapping attachment reverses the running direction.

After leaving the cut thread, the tapping attachment automatically switches back to the previous direction of rotation.

ATTENTION!

When retracting the tool spindle, make sure that the length compensation is not pulled out completely on tension. Avoid jerky retraction of the spindle.



The direction of rotation is changed in counterclockwise rotation (left-hand thread) and clockwise rotation (right-hand thread).

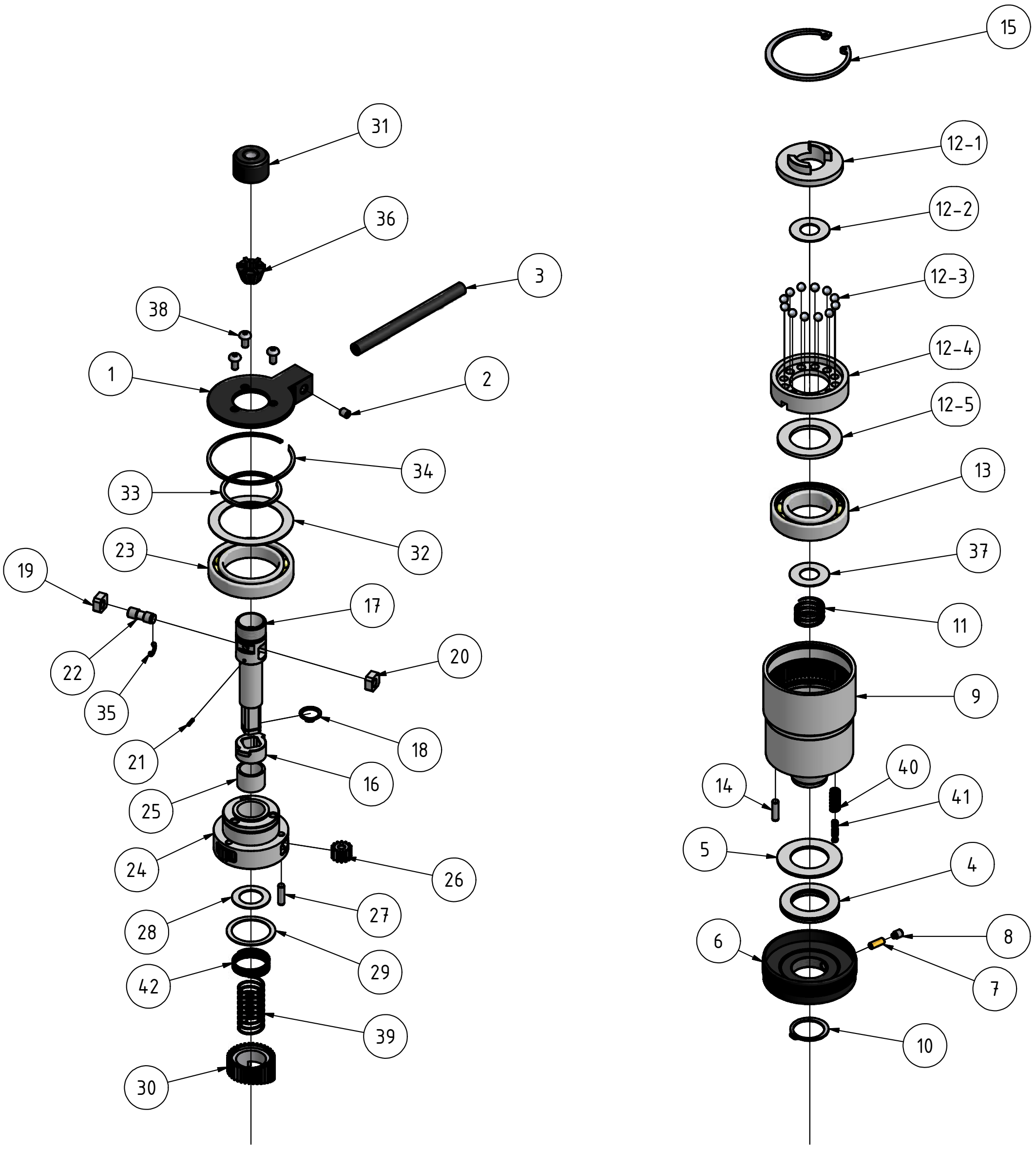
1.10 Maintenance and servicing

- ➜ Clean the tapping attachment with a hand cloth.
- ➜ Do not use aggressive solvents.
- ➜ Do not use fibrous materials.
- ➜ The thread apparatus is not lubricated.
- ➜ Spray or rub the tapping attachment with a preservative oil to prevent rusting and to preserve the running of the tapping attachment.
- ➜ Remove all coolant residues and machining residues before storage.

1.11 Change information operating manual

Chapter	Short summary	new version number
1.9	Layout change ; Change of the direction of rotation also in counterclockwise and clockwise rotation.	1.3.1
1.4 ; 1.7	Technical data, Maximum speed to 200 rpm ; Operation	1.3.2

2 Ersatzteilzeichnung - Spare parts drawing



Teileliste

Pos.	Bezeichnung	Designation	Menge Qty.	Grösse Size	Artikelnummer Item no.
1	Haltering	Guard ring	1		033520421
2	Gewindestift	Thread pin	1	DIN 916 - M6 x 8	033520422
3	Haltestange	Support rod	1		033520423
4	Axial-Nadellager	Axial needle bearing	1	AXK 3047	033520424
5	Auflagering	Supporting ring	1		033520425
6	Einstellring	Adjusting ring	1		033520426
7	Messingstift	Brass pin	1		033520427
8	Gewindestift	Thread pin	1	DIN 915 - M6 x 8	033520428
9	Gehäuse	Housing	1		033520429
10	Sicherungsring	Snap ring	1	DIN 471 - 26 x 1.2	0335204210
11	Feder	Spring	1		0335204211
12	Stellring Drehmoment komplett	Tension ring torque complete	1		0335204212
12-1	Stellring	Tension ring	1		
12-2	Distanzscheibe	Spacer ring	1		
12-3	Stahlkugel	Steel ball	12		
12-4	Kugelring	Ball ring	1		
12-5	Distanzscheibe	Spacer ring	1		
13	Rillenkugellager	Grooved ball bearing	1	6007	0335204213
14	Zylinderstift	Cylindrical pin	1	ISO 8734 - 5 x 18 - A	0335204214
15	Sicherungsring	Snap ring	1	GB 893.1 - 65	0335204215

Teileliste					
Pos.	**Bezeichnung**	**Designation**	**Menge**	**Grösse**	**Artikelnummer**
			Qty.	**Size**	**Item no.**
16	Vierkanthülse	Square case	1		0335204216
17	Welle	Shaft	1		0335204217
18	Sicherungsring	Snap ring	1	DIN 471 - 14 x 1	0335204218
19	Klemmstück Linksgewinde	Clamping piece, left-hand thread	1		0335204219
20	Klemmstück Rechtsgewinde	Clamping piece, right-hand thread	1		0335204220
21	Spannstift		1	ISO 13337 - 2 x 8	0335204221
22	Schraube Links-Rechtsgewinde	Screw, left- right hand tread	1		0335204222
23	Rillenkugellager	Grooved ball bearing	1	61909	0335204223
24	Zahnradhalter	Gear wheel holder	1		0335204224
25	Buchse	Bushing	1		0335204225
26	Zahnrad	Gear wheel	3		0335204226
27	Zylinderstift	Cylindrical pin	3	ISO 2338 - 5 h8 x 18	0335204227
28	Distanzscheibe klein	Spacer ring, small	1		0335204228
29	Distanzscheibe gross	Spacer ring, large	1		0335204229
30	Inneres Zahnrad	Inner gear wheel	1		0335204230
31	Spannmutter	Clamping nut	1		0335204231
32	Lagerabdeckung	Bearing cover	1		0335204232
33	Sicherungsring innen	Snap ring, inside	1		0335204233
34	Sicherungsring außen	Snap ring, outside	1		0335204234
35	Sicherungsscheibe	Snap ring	1	DIN 6799 - 5	0335204235
36-1	Flexible Spannzange klein	Flexible clamping ring, small	1		03352042361
36-2	Flexible Spannzange groß	Flexible clamping ring, large	1		03352042362
37	Distanzscheibe	Spacer ring	1		0335204237
38	Linsenkopfschraube	Round head screw	3	ANSI B18.3.4M - M5 x 0.8 x 10	0335204238
39	Feder	Spring	1		0335204239
40	Feder	Spring	9		0335204240
41	Feder	Spring	9		0335204241
42	Feder	Spring	1		0335204242